AN ANNOTATED LIST OF THE CARABIDAE (COLEOPTERA) RECORDED FROM CAVES IN NEW GUINEA

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Abstract

Twelve genera and eighteen species of Carabidae are listed from caves in the islands of New Guinea. All three major levels of adaptation to cavernicolous life are represented and the Agonini form the dominant element in the subterranean fauna.

Introduction

The extensive cave systems of New Guinea are now receiving increased attention from speleologists and several expeditions have been mounted in recent years, with the object of investigating the fauna. Notable among these are the British Speleological Expedition to Papua New Guinea, 1975 (Chapman 1976) and the Australasian Atea Expedition, 1978 (Smith 1980), in which one of us (RME) took part. Both of these major expeditions produced extensive collections of cave animals. The augmented level of exploration seems likely to be maintained for some years at least and it therefore appears desirable to draw together all available records in chosen groups, thereby providing basic lists to which the results of future expeditions may readily be attached.

Such is the aim of the present paper, which covers the family Carabidae, a dominant group in cave beetle faunas generally and evidently so in New Guinea. All published records known to the authors are included, together with hitherto unpublished results from the British expeditions of 1975 (BSE75) and 1978 (BSE78) (specimens determined by BPM), the Australasian expedition of 1978 (ATEA78) (specimens determined by RME), and data from material from earlier limited excursions, that have come to their notice. For the purposes of the list, the New Guinea region is taken to include the whole of the main island of New Guinea, plus the dependencies of Papua New Guinea.

List of species

Subfamily PAUSSINAE
Tribe Ozaenini
Pseudozaena (Trichozaena) cavicola Moore. NEW IRELAND: Kabase Cave (P. Beron, BSE75) (Moore 1978).

Subfamily SCARITINAE
Tribe Clivinini
Clivina sp. PAPUA: Atea Kananda, Yikebo (ATEA78).

Subfamily PTEROSTICHINAE
Tribe Agonini
Altagonum cracens Darlington. NEW GUINEA: Great Cave (Bem Tem), Telefomin (T. Hayllar) (Darlington 1971).

Altagonum misim Darlington. NEW GUINEA: Great Cave (Bem Tem), Telefomin (B. Craig and T. Hayllar) (Darlington 1971); Bem Tem, Telefomin (P. Beron and P. Chapman, BSE75); Hulup Tem, Telefomin (P. Beron, BSE75); Bolam Tigiin, Telefomin (P. Beron, BSE75); Nong River Cave, W. Sepic Province (P. Chapman, BSE75); Ogon II Cave, near Gogome, Chimbu Province (P. Beron, BSE75); Mebikombogo Cave, near Gurema, Chimbu Province (P. Beron BSE75). PAPUA: Ila Kananda, Nali Gorge (ATEA78); Iawarere Caves, near Port Moresby (R. A. Carver and T. L. Fenner); Bilel Tem, Hindenberg Wall (R. Plumley, BSE78); Um Tem, Bikatokbip (R. Plumley, BSE78).

Altagonum sphodrum Darlington. PAPUA: Yarom Deng Tem, Finim Tel (P. Beron, BSE75); Ok Kumun Tem, Finim Tel (P. Beron, BSE75); Finim Tem, Main Cave, Finim Tel (P. Beron, BSE75); Agim Tem, Finim Tel (BSE75); Atea Kananda, Duna Sands and Ooze Cruise (ATEA78).

Altagonum sp. n. PAPUA: Atea Kananda, Pikers Sump (ATEA78).

Colpodes sinuicauda Darlington. NEW GUINEA: caves near Telefomin (B. Craig) (Darlington 1971).

Montagonum sp. near *pandum* Darlington. PAPUA: Atea Kananda, Duna Sands (ATEA78).

Gastragonum caecum Moore. NEW GUINEA: Selminum Tem (P. Chapman, BSE75) (Moore 1978).

Nebriagonum foedum Darlington. WEST IRIAN: Maimbobo Cave, North Duman, Porol Range (F. Parker) (Darlington 1971).

Notagonum altum Darlington. PAPUA: Hyom Tem, near "Girtoil" (P. Chapman, BSE75).

Notagonum dentellum Darlington. PAPUA: Ila Kananda, Nali Gorge (ATEA78).

Notagonum margaritum Darlington. NEW GUINEA: Ogon II Cave, near Gogome, Chimbu Province (P. Beron, BSE75); Bem Tem, Telefomin (P. Beron and P. Chapman, BSE75).

Notagonum sp. near *margaritum* Darlington. PAPUA: Atea Kananda, Duna Sands (ATEA78).

Potamagonum diaphanum Darlington. PAPUA: Atea Kananda, Duna Sands (ATEA78).

Speagonum mirabile Moore. NEW GUINEA: Okemimal Tem and Selminum Tem, near Tifalmin (P. Beron and P. Chapman, BSE75) (Moore 1978).

Genus nov. sp. 1. PAPUA: Atea Kananda, Binatang Passage (ATEA78).

Genus nov. sp. 2. PAPUA: Atea Kananda, Binatang Passage (ATEA78).

Discussion

Although the above list is evidently no more than an interim summary of the known carabid fauna, the data available are already sufficient for some generalisations to be made. In particular, the dominance of the tribe Agonini* is very obvious. This is atypical for cave faunas in general but is entirely to be expected in New Guinea, where the tribe is exceptionally well represented and is dominant in mesophile habitats (Darlington 1971).

* = Platynini = Anchomenini: the correct name has yet to be settled

Information concerning the habits and biology of the various species recorded here is scant but from the wide range of morphological adaptation displayed, it seems clear that all three currently recognised levels of cavernicolous status, namely troglobite, troglophile and trogloxene, are represented. However, it is not always possible to specify with confidence the status of any given-species.

From its extremely attenuate form, vestigial eyes, flightlessness and occurrence deep within the Selminum Tem system, *Speagonum mirabile* is evidently a troglobite and it displays the highest level of adaptation yet discovered in the region. As far as can be judged from the inadequate material currently available, *Genus nov. sp. 1* and *sp. 2* also appear to be well adapted troglobites. *Gastragonum caecum* and *Altagonum* sp. n. are evidently troglobitic representatives of largely surface dwelling genera.

Pseudozaena cavicola, which was found in large numbers on bat guano, is presumably a predator of other, guano-feeding, arthropods; it is fully winged and closely related to a Malaysian species that is known to fly to light. Thus it is probably a troglophile. *Nebriagonum foedum*, discovered on fruit-bat droppings, belongs to an entirely flightless genus of montane mesophiles but may also be a troglophile. *Montagonum* sp. near *pandum* is essentially similar.

The remaining species of the list are all fully winged and show little or no obvious adaptation to life in caves; most have already been taken in surface habitats. However, from the numerous records from caves, *Altagonum misim* seems clearly more than a casual visitor to the habitat and may be classed as a troglophile. Its more localised congener, *A. sphodrum* shows a tendency in some populations (notably those in the Atea Kananda) to attenuation in body form and reduction in eye size and also seems to qualify for troglophile status. The large and worldwide genus *Clivina* is dominant in the fossorial faunas of wet places, such as lake and creek margins, and the single record from a cave may well be an incidental occurrence. For the other listed species, the data do not distinguish between regular and casual occurrences.

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